

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

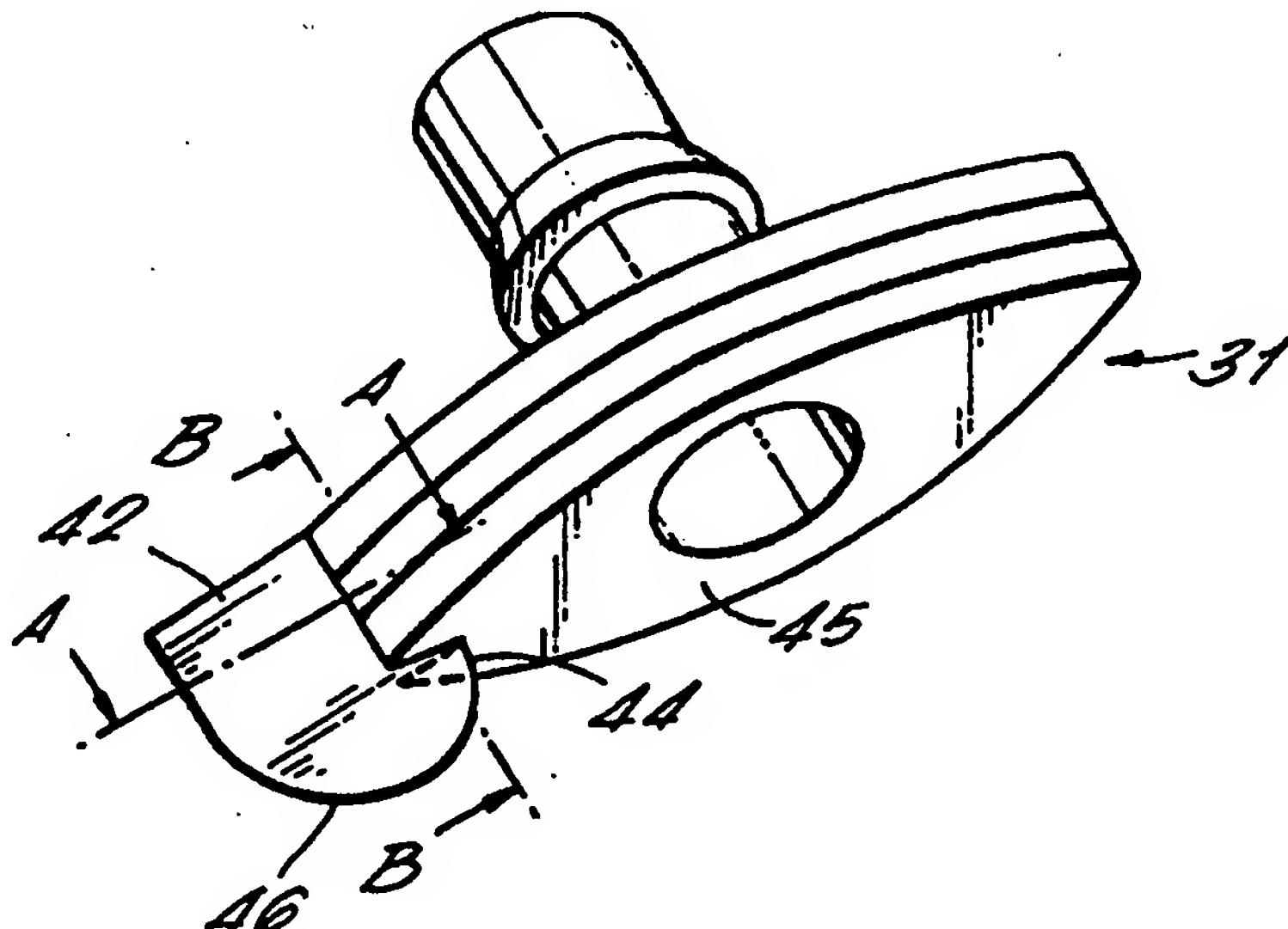
(51) International Patent Classification 6 :		(11) International Publication Number:	WO 99/06301
B65D 75/58	A1	(43) International Publication Date:	11 February 1999 (11.02.99)

(21) International Application Number:	PCT/EP98/04922	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(22) International Filing Date:	22 July 1998 (22.07.98)	
(30) Priority Data:		
9716009.7	29 July 1997 (29.07.97)	GB
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(54) Title: POUCH FOR PAINT

(57) Abstract

A bag container (4) for paint (2) or the like comprising two welded sheets (5) and an outlet orifice (30) provided in a plastics block (31) located between the sheets. The tendency for the bag to rupture when in use is reduced by use of dependant curved means (42, 50) to reduce the stress at the junction between one end (40) of the block and the sheets.



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POUCH FOR PAINT

This invention relates to containers,
5 specifically bag containers, for aqueous thixotropic
coating compositions and the like. The container is
particularly suitable for use with coating
compositions such as paints, distempers, varnishes or
wood stains which are conventionally applied to
10 surfaces found on buildings. The bag container is
specifically intended for use with the combination for
use in applying aqueous thixotropic coating
compositions described in pending PCT Application PCT
EP/96/05534 in the names of Imperial Chemical
15 Industries Plc and Black & Decker Inc.

That application describes a combination for
applying paint to a surface using a roller without the
need to re-dip the roller into the paint. The
20 combination includes a collapsible container bag
comprising opposed flexible walls and having an outlet
nozzle welded into opposed edge portions of the bag.
The container bag is accommodated within a box and an
inflatable bellows exerts pressure on the container
25 bag in use to expel paint contained in the bag through
the outlet nozzle. A long and relatively stiff
delivery tube is attached to the outlet nozzle and is
connected to a roller for applying paint to a surface.

30 It has been found in use that the combination of
movement of the nozzle caused by the long and
relatively stiff delivery tube and the collapse of the
bag as pressure is exerted on it by the bellows can
cause rupture of the bag and leakage of paint. These
35 ruptures are generally found to occur adjacent the

welded junction of the outlet nozzle and the flexible walls due to the increased stresses applied during pressurisation of the bag and manipulation of the delivery tube.

5

U.S. 4,280,498 discloses a valved drain assembly for a urostomy pouch. The assembly includes a body member adapted to be secured to a pouch at the lower end thereof and defining a path for the outflow of the 10 fluid contents of the pouch. The body member is of generally rhomboid cross-section with a major axis and a minor axis and coming to a point at both ends of the major axis. The front and rear walls of the pouch are welded at their peripheries by a heat-sealed bond or 15 by other suitable means. The line of the weld passes around the body member and contacts the pointed lateral edges thereof. Flexible tabs are provided to act as strain relievers to protect the material of the pouch from damaging contact with the upper corners of 20 the body member. It is therefore an object of the present invention to provide means for minimising or eliminating the risk of rupture of such bags, especially at the junction of the outlet nozzle and weld-line of the flexible walls. The tabs, however, 25 being displaced from the line of the heat-sealed bond and points of the body member cannot act as stress relievers for an internally pressurised bag. A stress concentration between the body member and walls still exists.

30

GB 2 193 485 discloses a medico-surgical bag assembly. A bag assembly is formed of two sheets welded together around the edge with an inlet tube of a soft flexible material with its end secured between 35 the two sheets at one edge. To strengthen the inlet

tube during the welding operation, a sleeve of a stiffer PVC is inserted in the end of the tube. The sleeve, however, does not act to reduce the stresses at the junction between the sheets and the inlet tube.

5

Collapsible bags as disclosed in U.S. 4,280,498 and GB 2 193 485 have therefore been found to be unsuitable for use in the application described above.

10

Accordingly, the invention provides a bag container for aqueous thixotropic coating compositions and other liquids or gels comprising two plastics sheets welded together along at least a portion of their edges and including an outlet orifice extending into a generally tubular nozzle, the outlet orifice being an aperture in a plastics block of generally rhomboid cross-section with a major axis and a minor axis and coming to a point at both ends of the major axis in which the outlet orifice block is welded between edge portions of said sheets, characterised in that means are provided for reducing the stress at a junction between at least one pointed end of the outlet orifice block and the sheets.

25

The present invention also provides a bag container for paint (and other liquids or gels) comprising two plastics sheets welded together along at least a portion of their edges and including an outlet orifice extending into a generally tubular nozzle, the outlet orifice being an aperture in a plastics block of generally rhomboid cross section with a major axis and a minor axis and coming to a point at both ends of the major axis in which the outlet orifice block is welded between edge portions of said sheets, characterised in that means are

provided adjacent a junction between at least one pointed end of the orifice block and the welded sheets to shield the junction from pressurised fluid.

5 In one embodiment, the means comprises an additional weld extending around said pointed end of the orifice block.

10 In another embodiment, the means comprises an insert fixed to or integral with said pointed end, the insert having a curved outer surface. Preferably the insert extends forwardly and downwardly from said orifice block and tapers to a curved edge.

15 Preferably the insert extends from a point on the major axis of the orifice block around an inner side of the junction to a point on said pointed end.

20 The curved edge may extend along at least part of the major axis of the orifice block.

25 Further features and advantages of the invention will be apparent from the following description by way of example, of two preferred embodiments of the invention, the description being read with reference to the accompany drawings, in which:

30 Figure 1 is a partially exploded perspective view of a combination for applying paint as described in application PCT EP/96/05534 but with certain parts omitted and some parts broken away for clarity.

35 Figure 2 is an enlarged view of the outlet orifice block of the combination shown in Figure 1, the prior art outlet orifice block.

Figure 3 is a section through the bag container of the combination of Figure 1 showing the outlet orifice block of Figure 2 in situ.

5 Figure 4 is a view similar to Figure 2 of a first embodiment of the invention showing a modified outlet orifice block.

10 Figure 5 is a section along the line A-A of Figure 4.

15 Figure 6 a section along the line B-B of Figure 4.

20 Figure 7 is an enlarged view similar to the upper part of Figure 3 showing a second embodiment of the invention.

25 Container bags of the present invention are specifically intended for use with the combination described in PCT application PCT EP/96/05534 and reference is directed to the disclosure of that application.

30 In that application, there is described a combination shown in Figure 1 for applying paint 2 to a surface using a roller 3 without the need to re-dip the roller 3 into paint 2. Combination 1 includes a collapsible container bag 4 comprising opposed flexible walls 5 rising from a base 6 formed by a transverse flexible wall and having a crease 7 intermediate and mid-way between flexible walls 5. Base 6 both facilitates compression of the container in a steady manner and also enables container 4 to stand upright by spacing apart walls 5 when container

4 is filled with paint 2. Flexible walls 5 and base 6 are composed of thermoplastics film consisting of a foil of polyethylene terephthalate laminated to a foil of low density polyethylene. Walls 5 and base 6 are 5 welded together by heat-sealed margin 8. Container 4 is provided with an outlet 9, described in more detail with reference to Figure 2. The outlet 9 is welded into a circular hole 5b formed in a 45° chamfered portion 5a of walls 5 and connectable to the roller by 10 delivery tube 10 which is long and relatively rigid. For clarity, tube 10 is shown disconnected from outlet 9. A channel defining spacer 11 is moulded integrally with and makes a communicating connection with outlet 9 at its proximal end 12 and extends down into 15 container 4 so that its open distal end 13 is close to base 6 of the container.

Container 4 is snugly accommodated inside lidded polypropylene box 17 having opposed walls 17a and 20 which is shown with its hinged lid 18 open. On closing, lid 18 provides a wall opposed to wall 17a. Lid receiving edges of box 17 are provided with gaskets 20 and outlet 9 is provided with an encircling gasket.

25

Box 17 also contains inflatable bellows like double bag 43 containing an inter-communicating aperture and an air line 45 which connects bag 43 to a compressor (not shown) located in casing 24.

30

In use, the compressor draws in air and pumps it into bag 43 causing the bag to inflate and exert a transverse horizontal compression on inner flexible wall 5 of container 4. This pressurises paint 2 35 sufficiently to deliver it along tube 10 into the

roller at a suitable rate.

Referring now to figures 2 and 3, the outlet 9 will be described in more detail. Outlet 9 is a generally cylindrical nozzle extending from an outlet orifice 30 formed in an outlet orifice block 31. The block is a "boat shaped" moulding of generally rhomboid cross-section having a major axis X and a minor axis Y. At the ends of major axis X, the opposed sides of the orifice block 31 meet at a point so that the ends of boat shaped block 31 have relatively sharp edges 32, 33.

The outlet 9 is injection moulded from high density polyethylene but may be satisfactorily manufactured from any crystalline polyurethane such as polypropylene as well as high density polyethylene. The outlet may also be formed from other materials such as nylon or polyester.

The orifice block 31 is welded between opposed edges of walls 5 of container 4, the walls being made from sheets of a thermoplastics film as described above. Suitable thermoplastic films include a foil of polyethylene terephthalate as described above as well as polypropylene and other suitable thermoplastics. The weld lines 35, 36 of the bag edges are shown in Figure 3 and extend along side walls 37, 38 of orifice block 31.

The container bag illustrated in Figures 1 to 3 has been found to work perfectly satisfactorily in the vast majority of cases but, in approximately 1 in 400 examples, it has been found that the container 4 may rupture allowing paint 2 to be spilled therefrom.

These ruptures are generally found to occur in a wall 5 of container 4 adjacent to point 40 of orifice block 31 which is at the lower, inner side of the outlet orifice block. It appears that these ruptures are 5 caused by the combination of the pressure exerted by bellows 34 which causes container bag 4 to collapse in use and movement of the orifice block caused by the long relatively rigid tube 10 moving in use and causing movement of the orifice block relative to the 10 bag walls 5. These pressurisation of the bag 4 and movement of the orifice block produce stresses at the junction between the orifice block 31 and flexible walls 5.

15 Figures 4 to 6 illustrate a first embodiment of the invention which provides a modified outlet orifice block 31. In this modification, the edge 32 of orifice block 31 is extended by an insert 42 which may be attached to or integrally formed with the orifice 20 block 31. If the insert 42 is integrally formed, it will clearly be of the same material as orifice block 31 but if it is fixed to orifice block 31 it may be of a different material selected from the same group of suitable materials mentioned above.

25 As will be seen in Figures 4 to 6, the insert extends forwardly and downwardly from edge 32 of orifice block 31. In the embodiments illustrated, the insert extends for a distance slightly greater than 30 the depth of orifice block 31 and may extend downwardly for a distance approximately equal to the thickness of orifice block 31. The trailing edge 44 of insert 42 extends along the underside 45 of orifice block 31 generally along the major axis of block 31 35 shown in Figure 2 and the distance of this extension

may again be approximately the thickness of orifice block 31. As illustrated in Figures 5 and 6, the insert 42 tapers both forwardly and downwardly to an edge 46 which is curved for at least most of its 5 length. To facilitate moulding, the edge 32 of orifice block 31 may be blunted as illustrated in Figure 5 where it is attached to insert 42 and then extend to edge 46.

10 It will be appreciated that the shape of insert 42 is such that its curved edge 46 is relatively flexible compared with edge 32 of prior art orifice block 31 and eliminates the stress concentration of point 40 shown in Figure 3, which it is thought, 15 contributes to the rupturing problem described above.

A second embodiment of the invention is illustrated in Figure 7.

20 In this embodiment, the weld line 35 of the container bag shown in Figure 3 is extended adjacent to point 40 so that the weld line forms a curved portion 50 extending around point 40 to a point 51 on the lower side of orifice block 31. The constraints 25 of the welding process limit the distance by which point 51 may be spaced from point 40 but the additional curved weld line 50, in similar manner to insert 42, provides a relatively flexible pendant formation in the region of point 40. This serves to 30 reduce the risk of rupture in the manner described above by reducing build up of stress at point 40.

35 Although the above embodiments describe the provision of a flexible pendant formation only adjacent to point 40 at the lower end of orifice block

- 10 -

31, it will be appreciated that a similar formation may be provided at the upper end of block 31.

CLAIMS

1. A bag container (4) for paint (2) (and other liquids or gels) comprising two plastics sheets (5) welded together along at least a portion of their edges and including an outlet orifice (30) extending into a generally tubular nozzle, the outlet orifice being an aperture in a plastics block (31) of generally rhomboid cross section with a major axis and a minor axis and coming to a point at both ends (32, 33) of the major axis in which the outlet orifice block (31) is welded between edge portions of said sheets (5), characterised in that means (42, 50) are provided for reducing the stress at a junction between at least one pointed end (32, 33) of the outlet orifice block (31) and the sheets (5).

2. A bag container (4) for paint (2) (and other liquids or gels) comprising two plastics sheets (5) welded together along at least a portion of their edges and including an outlet orifice (30) extending into a generally tubular nozzle, the outlet orifice being an aperture in a plastics block (31) of generally rhomboid cross section with a major axis and a minor axis and coming to a point at both ends (32, 33) of the major axis in which the outlet orifice block (31) is welded between edge portions of said sheets (5), characterised in that means (42, 50) are provided adjacent a junction between at least one pointed end (32, 33) of the orifice block (31) and the welded sheets (5) to shield the junction from pressurised fluid.

3. A bag (4) as claimed in claim 1 or claim 2 in which the means comprises an additional weld (50)

extending around an inner side of said pointed end (32, 33).

4. A bag (4) as claimed in claim 1 or claim 2 in
5 which the means comprises an insert (42) fixed to or
integral with said pointed end (32, 33), the insert
(42) having a curved outer surface.

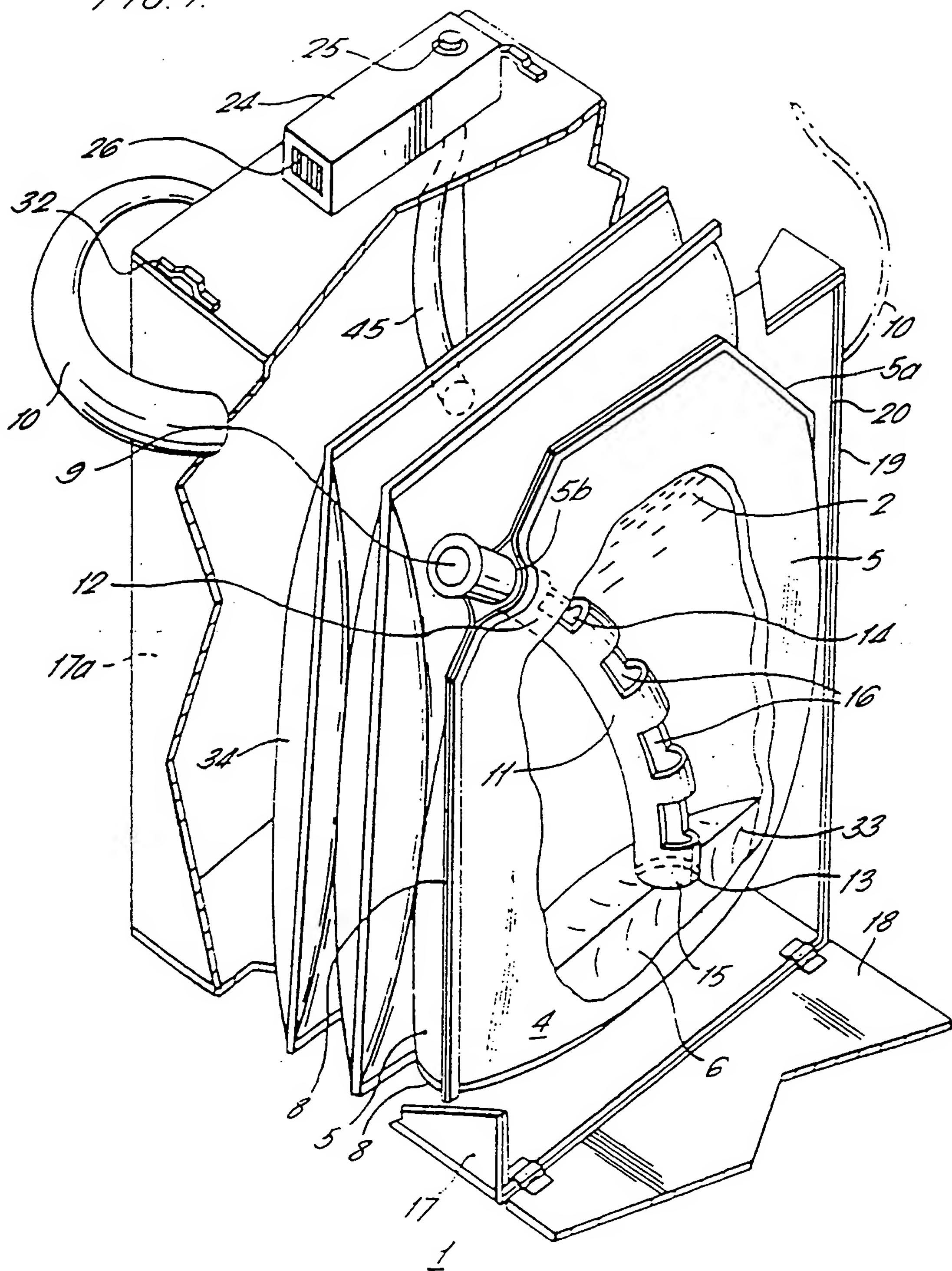
5. A bag (4) as claimed in claim 4 wherein the
10 insert (42) extends from a point on the major axis of
the orifice block (31) around an inner side of the
junction to a point on said pointed end (32, 33).

6. A bag (4) as contained in claim 4 or claim 5
15 in which the insert (42) extends forwardly and
downwardly from said orifice block and tapers to a
curved edge (46).

7. A bag (4) as claimed in claim 6 in which said
20 curved edge (46) extends along at least part of the
major axis of said orifice block (31).

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FIG. 1.



2/4

FIG. 2.

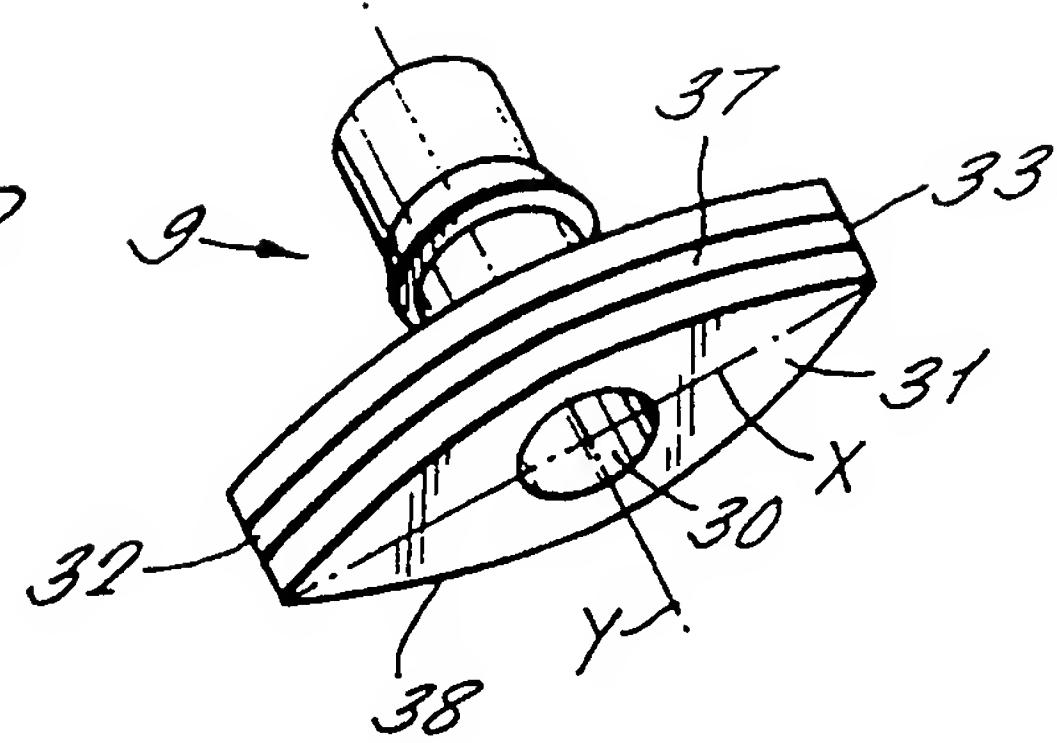
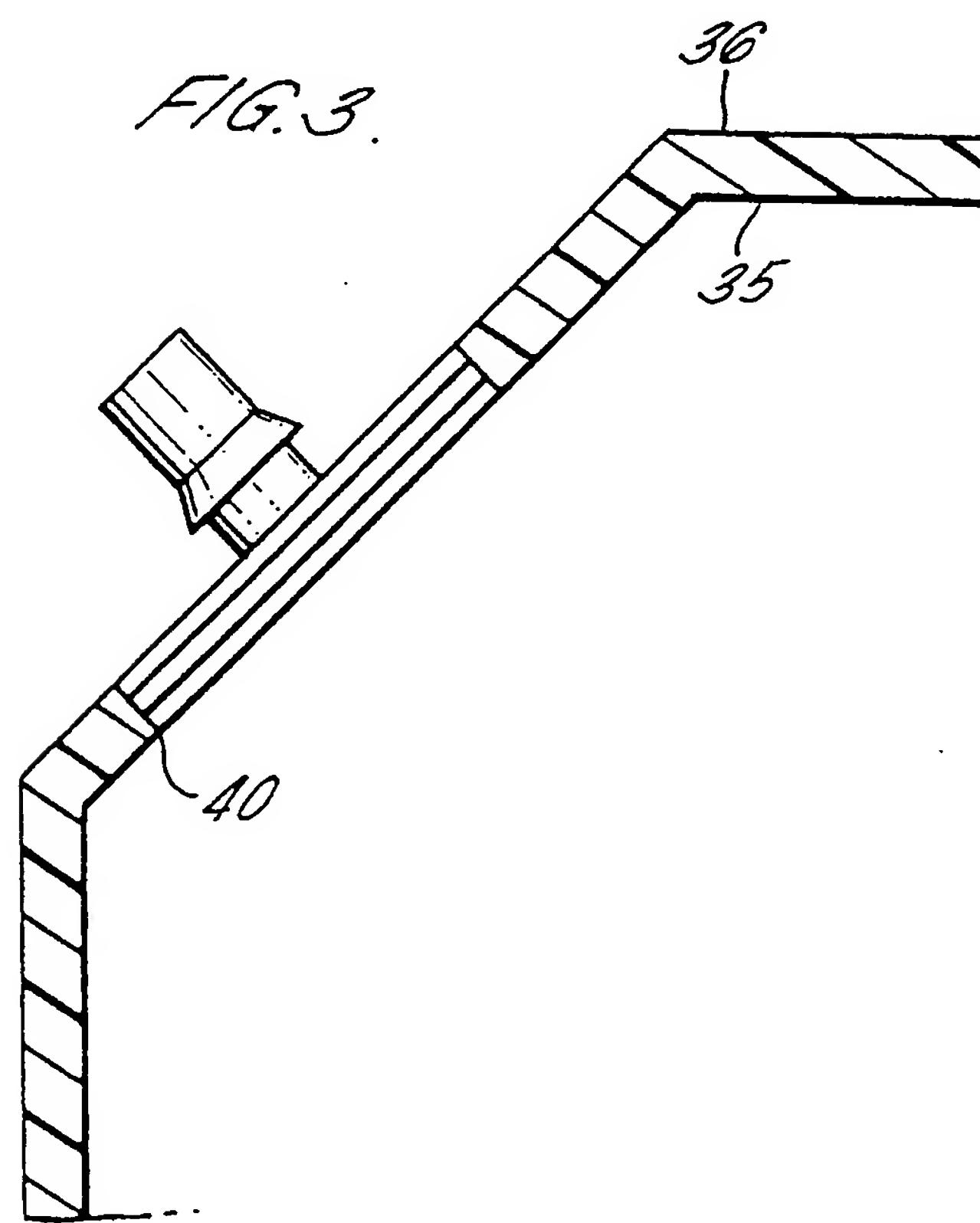


FIG. 3.



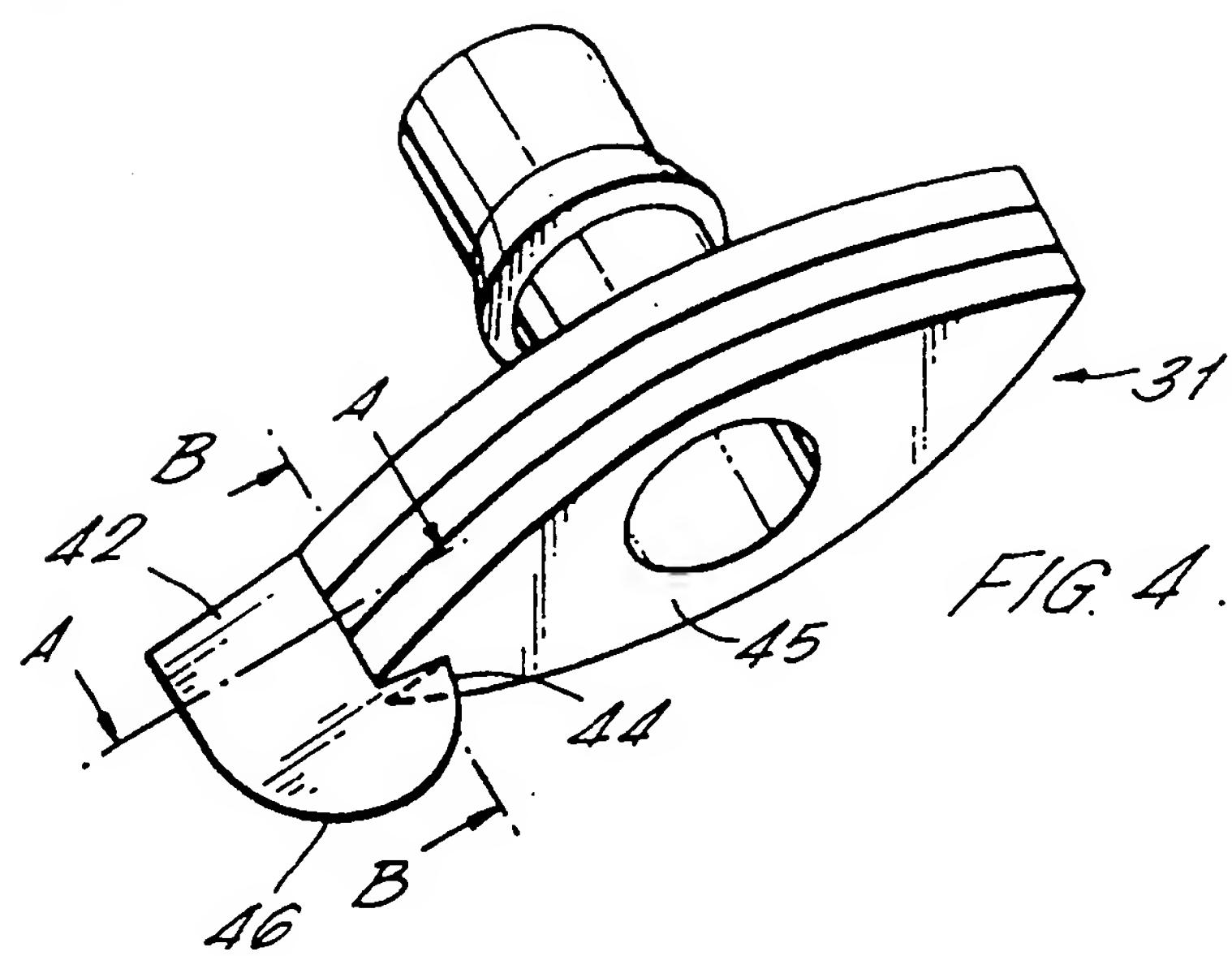


FIG. 5.

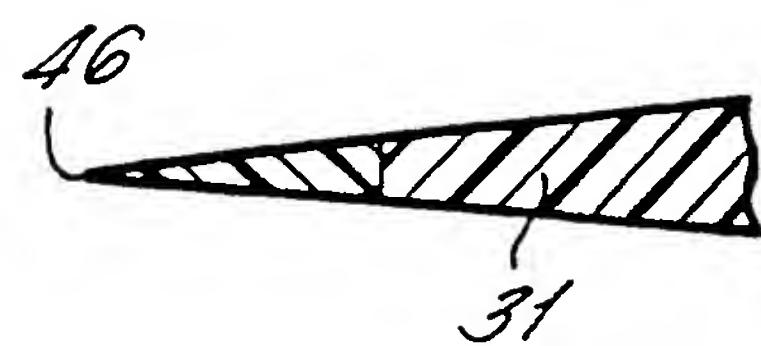


FIG. 6.

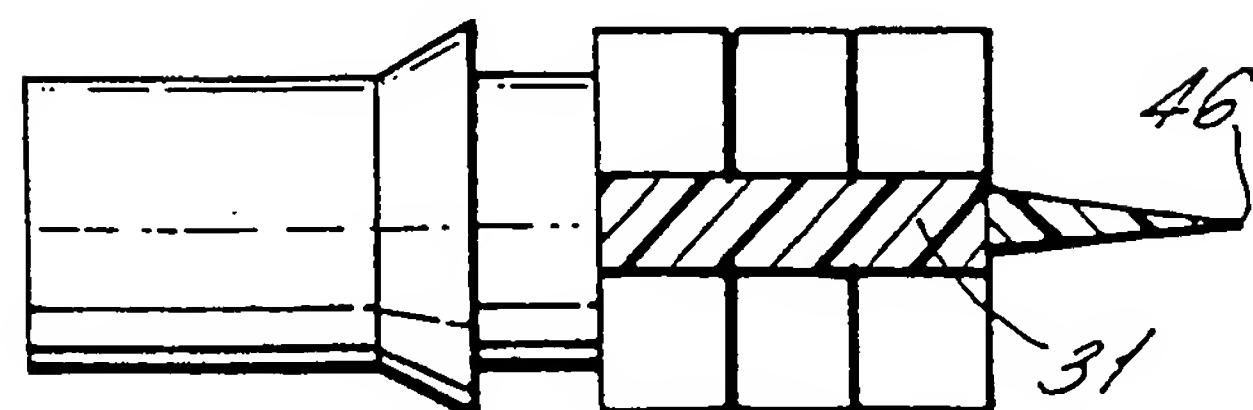
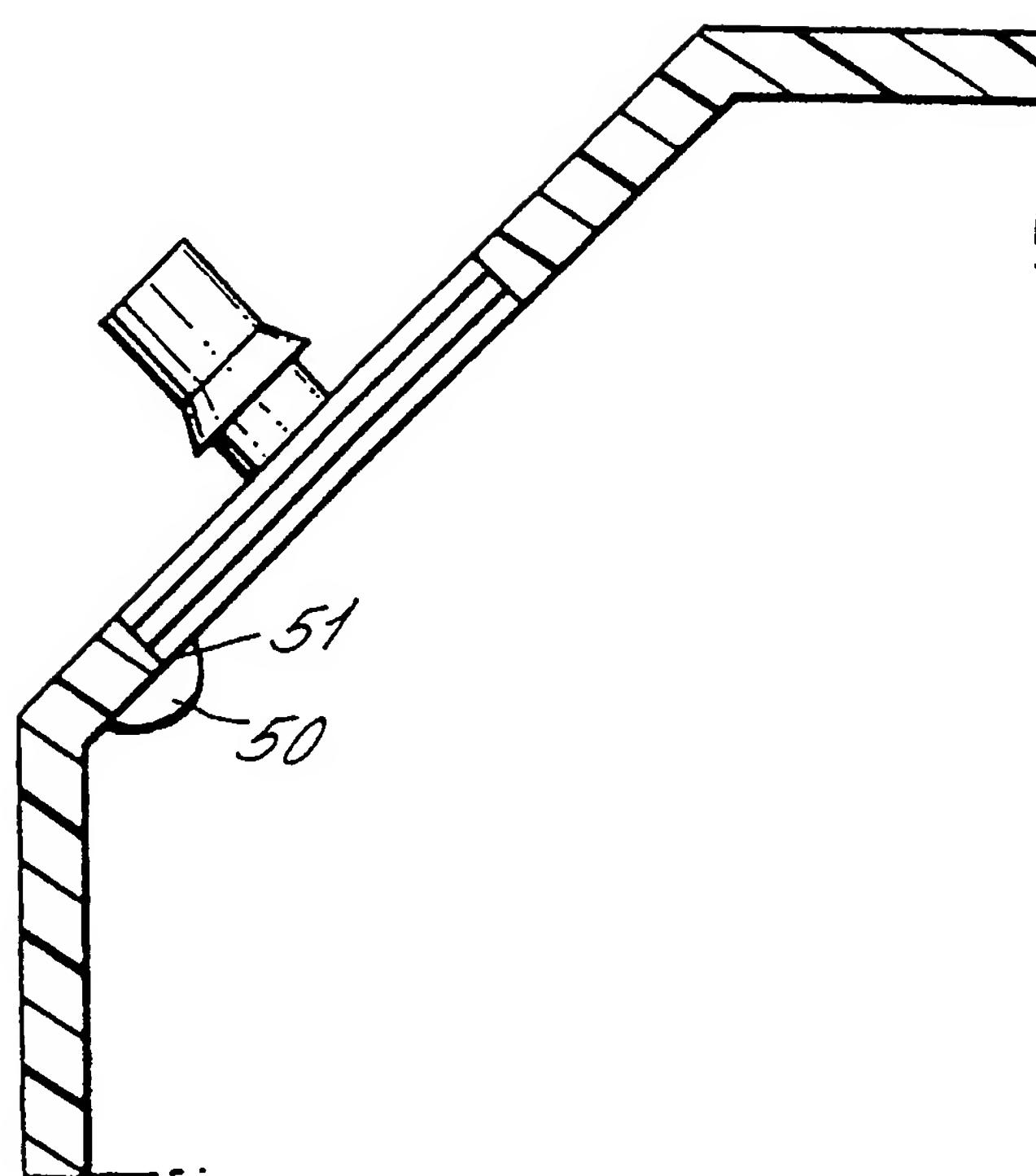


FIG. 7



INTERNATIONAL SEARCH REPORT

Application No
PCT/EP 98/04922

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D75/58

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B65D A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 280 498 A (JENSEN MARVIN E) 28 July 1981 cited in the application see column 5, line 27 - column 5, line 41 see figure 2 ---	1,2,4-7
A	GB 2 193 485 A (SMITHS INDUSTRIES PLC) 10 February 1988 cited in the application see page 1, line 121 - page 2, line 113 see figures 1,2 ---	1,3
A	US 4 732 299 A (HOYT EARL E) 22 March 1988 see column 2, line 59 - column 4, line 42 see figures 1-12 ---	1,2,4-7

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

13 November 1998

Date of mailing of the international search report

23/11/1998

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INTERNATIONAL SEARCH REPORT

Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 364 384 A (GRABENKORT RICHARD W ET AL) 15 November 1994 see figure 2 -----	1, 3
A	WO 97 25156 A (ICI PLC ;BLACK & DECKER INC (US); ELLIOTT DAVID (GB); MCDERMINT IA) 17 July 1997 see figure 1 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Application No

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